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7. BREWING & FERMENTATION

Wine.

1882

Loder

RECORDED

A.D. 1882, 13th JULY. N° 3323.

Manufacture of Wine, &c.

LETTERS PATENT to Johan Hern Loder of Leiden Holland for an invention of "IMPROVEMENTS IN THE MANUFACTURE OF WINE OR ALCOHOLIC BEVERAGES."

PROVISIONAL SPECIFICATION left by the said Johan Hern Loder at the Office of the Commissioners of Patents on the 13th July 1882.

JOHAN HERN LODER of Leiden Holland. "IMPROVEMENTS IN THE MANUFACTURE OF WINE OR ALCOHOLIC BEVERAGES."

- 5 This wine or beverage is obtained by the fermentation of sugar and glucose mixed with colouring matters The wine is a solution of alcohol, of aromatic properties, and of secondary products of fermentation It serves for distilling, for the manufacture of vinegar, and for consumption as a beverage. The method of manufacturing is analogous to that employed for Belgian beers, by which various
- 10 other kinds of grain beside barley are saccharified by the malt with this difference; that instead of hops colouring matters are added to the malt before boiling Other matters which may be saccharified by the malt and the acids may be employed The colouring materials used are yellow dye woods, red dye woods and orchella weed or sorrel paste, for the white sparkling wines the red dyes are not used, for
- 15 wine for the distilleries or for the manufacture of vinegar the colouring substances other than the yellow wood may be omitted The yellow woods which may be used are those of which the principals when under treatment by alkali or alkalines are proved to contain phloroglucine or catechines or they may be replaced by other substances offering the same reactions If on the contrary these elements
- 20 when treated by acids or alkali give pyrogalllic acid, terpenes, primary phenoles or primary phenolic acids they must not be used The red woods which may be used are those of which the elements give with nitric acid, trinitro resorcine

- This resorcine may replace them as also other substances giving the same reaction If by treatment with alkali or acids they give pyrogalllic acid, terpenes,
- 25 primary phenoles or primary phenolic acids they are to be excluded To the wort is added as much of these colouring matters as necessary to have per litre 0.5 to 1 gramme of dry extract of yellow wood, 0.5 to 1 gramme of dry extract of red

[Price 4d.]

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wood and 0·5 to 1 gramme of dry extract of sorrel paste. Then may be added a minimum quantity say 0·1 to 0·5 grammes per litre of grape oil or a similar quantity of a mixture of castor and linseed oils, these may again be replaced by similar quantities of either linoleic acid or ricino oleic acid. The wort is heated by steam under a low pressure for the purpose of keeping the glucose intact. After 5 cooling there is added per litre 0·75 to 2·5 grammes of tartaric acid in solution and 1 to 3·5 grammes of saltpetre in solution or chlorates in combination with salts of ammonia according to the nature of the wort and 0·1 to 0·5 grammes per litre of tartrate of iron may be added. Then may be added either the quantity of brandy (*eau de vie*) or alcohol necessary to have per litre 20 to 25 grammes of 10 spirit at 100° or 5 to 6 grammes of yeast. The fermentation is promoted by Dutch yeast or by wine yeast.

This fermentation is carried on in vats closed by hydraulic bungs, and in cellars where the temperature is maintained at about 12° C. When the principal fermentation is completed the liquid is drawn off into other vats in cellars where 15 the temperature is maintained at about 6° C.

The yeast which remains in the first vat is collected. This transfer from vat to vat is optional and only necessary when there is an excess of yeast. When the second fermentation is completed the liquid is clarified by tannine and heated to 55° or 60° C. To utilize the excess of yeast sugar may be added to the wort 20

If the wort contain albuminous matters which would require boiling a long time, before coagulating tannine may be added.

During all the operations including the saccharification of the wort up to the moment of the secondary fermentation the access of the air must be prevented. Instead of orchella or sorrel paste such extracts may be used as will give orcin 25 when treated by alkali or alkalines. In that case the second fermentation is carried on in open vats.

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SPECIFICATION in pursuance of the conditions of the Letters Patent filed by the said Johan Hern Loder in the Great Seal Patent Office on the 30th December 1882.

JOHAN HERN LODER of Leiden Holland IMPROVEMENTS IN THE MANUFACTURE
5 OF WINE OR ALCOHOLIC BEVERAGES.

This Wine or beverage is obtained by the fermentation of a solution of Sugar or glucose mixed with coloring matters, or their principles This wine is a solution of alcohol of colouring matters obtained by the influence of fermentation or other colouring matters or their principles, and of secondary products of fermentation It
10 serves for distilling, for the manufacture of Vinegar and for consumption as a beverage

Instead of Sugar those solutions may be employed from which Sugar is made, and instead of glucose may be used those substances which give glucosic solutions when treated by the ordinary processes employed in making alcoholic beverages or
15 alcohol from amylaceous matters.

If the Wine serves for the fabrication of beverage or Vinegar, different kinds of grain are used But it is permitted to take on 1000 kilogrammes of grain to 5 kilo of beetroot or 100 kilo of its weight young or 50 kilo germinated potatoes

20 The aromatic principles or colouring matters that are employed in this manufacture may be divided into three categories.

Firstly Those substances of which the principles when under treatment by alkali or alkines are proved to contain phloro glucine or catechines.

From those the quercetin and morin or morintarmic acid are preferred
25 If the coloring matters above mentioned prove to contain primary phenals or primary phenalic acids they are not used to 1000 kilo Sugar are only tolerated 50 grain of them.

The aldehydines of those acids may be well employed if they accompany the matters above mentioned

30 The terpenes that are mixed with those matters must be eliminated firstly by distillation with water, on 1,000 kilo Sugar only 50 grains are allowed.

Those that contain pyrogallic acid are only used to clear the Wine

Secondly are used matters the elements of which give with nitric acid trinitro resorcine. Such matters are used as resorcine or trinitro resorcine

35 Thirdly are used those substances which will give orcin when treated by alkali or alkalines The extract of orchella paste which contains in the meantime erythrit (erythroglucin) and other colouring matter of that kind are preferred

For red or white wines all the aromatic principles above mentioned may be employed the difference is only in the relative quantities used.

40 These aromatic principles are only mixed with a mash prepared for fermentation.

The boiling is only from importance for the extract of sorrel paste or the like with the solution of albuminous matter—In that case the other aromatic principles and the tartaric acid are added after the boiling but it remains optional

This mixture may be boiled but the boiling is unnecessary Most of the
45 colouring matters are formed by the act of fermentation with the aromatic principles above mentioned I divide in three categories the colouring matters that may be obtained in this manufacture.

Firstly The solution of colouring matters obtained by the fermentation of Sugar, orscille and saltpetre.

50 To 1000 kilo sugar or glucose to be transformed in alcohol 15 albuminous matter

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of grains in solution is used a maximum of 10 kilo dry extract of sorrel paste and 5 kilo saltpetre and 6 a 7 tartaric acid.

The nature of the colouring matters among others therefrom if the mixture has been boiled or not and of the nature of soorel paste or the like.

These colouring matters are only used to vary the shade of colour.

Their nature depends from the quality of sorrel paste or the like.

Secondly. Coloring matters obtained by the fermentation of sugar trinitro resorcine and extract of sorrel paste.

To 1,000 kilo sugar or glucose to be transformed in alcohol are added a maximum of kili trinitro resorcine, and 10 kilo extract of sorrel paste.

To this may be added 0.4 kilo. iron in powder, and 2 to 3 kilo. tartaric acid or 4 a 5 kilo cluercetin or 7 a 8 kilo or other extracts of yellow dye wood.

Instead of iron, tartrite of iron may be used.

The nature of these colouring substances depends amongst others of the quality and nature of albuminous matter in the mash or the course of fermentation of the boiling of the quantity of iron and of the quantity and nature of tarmic principles used.

These different colouring matters are the most important ones for the red wines.

Thirdly. Colouring matters obtained by the fermentation of sugar resorcine saltpetre and tartaric acid, cluercetin or other extractive principles of yellow dye woods.

To 1,000 kilo sugar to be transformed in alcohol are used a maximum of 3 kilo. resorcin 4 a 5 kilo cluercetin or 7 a 8 kilo principles of yellow dye woods 5 kilo saltpetre and 6 a 7 kilo tartaric acid.

Trinitro resorcine may replace the resorcin and saltpetre and tartrite of iron added.

The nature of these colouring matters depends amongst other of the nature and quality of albuminous matter of grain contained in the mash and of the nature of the turmical principles added.

Those coloring matters are the most important ones for the white and sparkling wines.

All the colouring matters mentioned may be formed together in one mash. But it must be borne in mind that to 1,000 Kilo Sugar not more than 5 Kilo Saltpetre or 4 Kilo Trinitro resorcine are used—So there may be to 1,000 Kilo Sugar 3.3 Kilo Saltpetre and 1.3 kilo Trinitro resorcine. The quantities of the other aromatic principles and of the tartaric acid are made in proportion with them—However it is permitted to increase this proportion if there are albuminous matters in the mash till the concurrence of $\frac{1}{3}$ weight albuminous matter as Saltpetre or $\frac{1}{4}$ weight albuminous matter as trinitro resorcine

With these coloring matters certain oleic acids may be employed the acids of 40 Castor oils and linseed oils are preferred the oils must firstly be saponified by steam or potas, to 1,000 Kilo Sugar a maximum of 5 Kilo is used.

In this manufacture the fermentation is conducted on the same manner as that in use for Wine or other Alcoholic beverages.

To promote fermentation any Yeast may be taken For the further operations the yeast recollected is preferred this yeast must be used immediately.

The mash used in this manufacture must have been cleared by filtration or otherwise to prevent the loss of colouring matter.

The fermenting Solution must be often drawn off to have a clear wine and at the end of the operations it must be cleared by tarmic acid, albumine or otherwise. It may be also heated to 55 a 60° to prevent alteration.

At each drawing off of the liquid there remains much coloring matter that may be drawn off by Alcohol immediately for onydation diminish, their solubility.

During all the operations the access of air must be prevented.

To the liquid obtained by this manufacture may be added different fruit oils or their principles or aldehydines like salicin and benzoil aldehydines

But these are mixtures regulated by taste.

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Having thus described the nature of my inventions, and how the same may be employed I would have it understood that I do not claim those principles that are employed for the manufacture of Beer but the coloring matter of fruits.

What I do claim and desire to secure by Letters Patent is

- 5 Firstly—The improvement in the treatment of the materials hereinbefore described and their application for the manufacture of Wine or other Alcoholic beverages substantially as setforth.

Secondly the Alcoholic Solution of coloring matters obtained by the treatment of the materials hereinbefore described substantially as setforth.

- 10 In witness whereof I the said Johan Hern Loder have hereunto set my hand and seal this thirtieth day of December in the year of our Lord One thousand eight hundred and eighty two.

J H LODER. (L.S.)

- Signed Sealed and Delivered
15 in the presence of
O G BEARD
8 Quality Court.

LONDON: Printed by GEORGE E. B. EYRE and WILLIAM SPOTTISWOODE,
Printers to the Queen's most Excellent Majesty.
For Her Majesty's Stationery Office.

1882.